

Aerosol/Cloud/Radiation Related Measurements for May 2003 Aerosol IOP

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AEROSOL OPTICAL PROPERTIES				
Measurement	Instrument	PI/team	Surface	Air
Aerosol absorption (532 nm)	Photoacoustic	Arnott (DRI)	TBDGIF	TO
Aerosol absorption (450, 550, 700 nm)	Modified aethalometer Aethalometer	Ogren (CMDL)	AT	
Aerosol absorption (7 wavelengths)	Modified Aethalometer	Arnott	GIF	
Aerosol absorption (565 nm)	PSAP	Ogren (CMDL) (ARM AOS)	AT	
Aerosol absorption (565 nm)	PSAP	Ogren (CMDL) (ARM IAP)		IAP
Aerosol absorption (466, 530, 660 nm)	Modified PSAP	Covert/Alquist (UW)	TBDAT	TO
Aerosol scattering and hemispheric back ward scattering (450, 550, 700 nm, D _p < 1 μm and D _p < 10 μm, all at both low and varying RH)	TSI 3563 integrating nephelometers, scanning humidograph system	Ogren (CMDL) (ARM AOS)	AT	
Aerosol scattering and hemispheric backward scattering (450, 550, 700 nm, D_p < 1 μm and D_p < 10 μm), all at low RH	TSI 3563 integrating nephelometers, scanning humidograph system	Ogren (CMDL)	GIF	
Aerosol scattering and hemispheric back ward scattering (450, 550, 700 nm, D _p < 1 μm) low RH and aerosol scattering (550 nm) at RH=85%)	TSI 3563 integrating nephelometers, scanning humidograph system	Ogren (CMDL) (ARM IAP)		IAP
Aerosol scattering and hemispheric back ward scattering (450, 550, 700 nm)	TSI 3563 integrating nephelometers	Covert/Elleman (UW)		TO
Aerosol hygroscopic scattering (RH=30, 60, 85%) (550 nm)	Humidified Nephelometer, humidigraph	Covert/Elleman (UW)		TO
Aerosol scattering (532 nm)	Nephelometer (DRI integrating sphere)	Arnott/DRI	TBDGIF	
Aerosol scattering (530 nm)	Nephelometer (Radiance Research)	Arnott/DRI	GIF	
Aerosol extinction (532 nm)	Cavity Ringdown (CRD)	Arnott/DRI	TBDGIF	
Aerosol extinction (700 nm)	Cavity Ringdown (CRD)	Strawa (NASA/Ames)		TO
Aerosol extinction (466, 530, 660 nm)	Optical extinction cell	Covert/Alquist (UW)	TBD	

AEROSOL & CLOUD MICROPHYSICAL PROPERTIES				
Measurement	Instrument	PI/team	Surface	Air
Aerosol Size Distribution 0.3-2.5 μm	PCASP (0.1-2.5 μm) >0.3 μm (CAPS)	CIRPAS		TO
Aerosol Size Distribution >0.5 μm	TSI aerodynamic particle sizer	CIRPAS		TO
Aerosol Size Distribution (20 - 500 nm)	SMPS	Hudson (DRI)	TBDGIF	
Aerosol size distribution (0.1–10 μm)	PCASP	Ogren (CMDL) (ARM AOS)	AT	
Aerosol size distribution 10 nm- 1 μm at 2 RH	TDMA	Rissman/Seinfeld (Cal Tech)		TO
Total particle number (>0.01 μm)	TSI 3010 CPC	Ogren (CMDL) (ARM AOS)	AT	
CCN spectrometer NEEDS TO BE CLARIFIED: SPECTRUM OR NUMBER CONC AT SOME SPECIFIED SUPERSATURATION(S)?	CCN spectrometer Hudson (DRI)	Hudson (DRI)X	GIF	
CCN spectrometer 0.2%, 0.4%, and 0.7% (TO); 0.3% (GIF)concentration at a still to-be-determined supersaturation	CCN spectrometer Rissman/Seinfeld (Cal Tech)	Rissman/Seinfeld (Cal Tech)X	GIF	TO
Aerosol/cloud drop size distributions (0.5-50 μm) CAPS, FSSP	CAPS, FSSP CIRPAS	CIRPAS		TO
Johnson probe in CAPS eCloud liquid water	Johnson probe in CAPS CIRPAS	CIRPAS		TO
Gerber PVM probe eCloud Cloud liquid water	Gerber PVM probe CIRPAS	CIRPAS		TO
Standard meteorological instruments Meteorological: {Pressure, Temp, RH, Winds}	CIRPAS	CIRPAS		TO, IAP

AEROSOL RADIATIVE INFLUENCES				
Measurement	Instrument	PI/team	Surface	Air
Aerosol optical thickness, extinction profiles	Airborne AATS-14 Sun photometer	Schmid (NASA Ames)		TO
Aerosol optical thickness (6 wavelengths, sky radiance) derive Angstrom exponent, SSA, aerosol size distribution, refractive index	Cimel Sun and sky photometer	ARM SGP and AERONET	X	
Aerosol optical thickness (5 wavelengths), direct/diffuse ratio, Angstrom exponent	MFRSR	ARM SGP	X	
Direct, diffuse spectral irradiance, AOT	RSS	ARM SGP	X	
Aerosol optical thickness (355 nm), aerosol extinction, backscatter, water vapor mixing ratio, relative humidity profiles	Raman lidar	ARM SGP	X	
Aerosol backscatter profiles (523 nm)	MPL	ARM SGP and Tsay/Ji (NASA/GFSC)	X <u>S</u>	
Aerosol optical thickness (0.3-2.5 μm), sky radiance, polarization (870 nm), BRDF	Sun-sky-surface sensor	Tsay/ <u>Ji</u> (NASA/GSFC)	<u>XS</u>	
Broadband irradiance	Broadband cavity radiometer	ARM SGP	X	
Broadband irradiance	PSP/CM21, NIP/CH1, PIR/CG4, NILU-UV	Tsay/Ji (NASA GSFC)	<u>XS</u>	
UV Diffuse/direct radiance (300-360 nm)	UVRSS	Slusser (CSU)	X	
Direct/diffuse irradiance (360-1060 nm)	RSS	Michalsky (SUNY-Albany)		
Upwelling and downwell SW spectral irradiance/radiance, surface albedo 300-2500 nm	Solar Spectral Flux Radiometers (SSFR)	Pilewskie (NASA Ames)		TO
reflectance, radiance or irradiance spectra (350-2500 nm)	SWS (Shortwave Spectroradiometer), ASD Solar spectrometer	Pilewskie (NASA Ames) Tsay/Ji (NASA GFSC)	X	
Downwelling spectral irradiance (3-20 μm)	AERI	ARM SGP, <u>Tsay/Ji (NASA/GSFC)</u>	<u>XS</u>	
Total upward and downward fluxes	Kipp and Zonen CM-22 pyranometers, CG-4 pyrgeometers	A. Bucholtz (NRL)		TO
<u>Sky radiance</u>	<u>Whole Sky Imager (WSI)</u>	<u>ARM SGP</u>	<u>X</u>	
<u>Sky images</u>	<u>Total Sky Imager (TSI)</u>	<u>ARM SGP, Tsay/Ji NASA/GSFC</u>	<u>X, S</u>	

AEROSOL & GAS COMPOSITION				
Measurement	Instrument	PI/team	Surface	Air
Aerosol chemistry	MOUDI	Hegg (UW)		TO
Aerosol major ion concentration	Aerosol filters, IC	Quinn (PMEL)	AT	
Total/organic/elemental carbon C/OC/EC	Aerosol filters	Kirchstetter (LBL)	TBDAT	
Light transmission (350–1000 nm)	Light spectrometer	Kirchstetter (LBL)	TBD	
Aerosol major ion concentration	PILS sampler-Ion Chromatog.	Lee (BNL)	TBDGIF	
Aerosol major ion concentration	Quartz filter	Lee (BNL)	GIF	
Total organic carbon	PILS sampler-UV oxidation	Lee (BNL)	GIFTBD	
Aerosol mass concentration	TEOM	Lee (BNL)	GIFTBD	
Aerosol mass concentration	TEOM	Arnott (DRI)	GIF	
Aerosol mass concentration	Dusttrack	Arnott (DRI)	GIF	
Aerosol single particle mass spectrum and aerodynamic diameter	Single Particle Laser Ablation Time of Flight Mass Spectrometer (SPLAT)	Alla Imre (BNL)	GIF	
Refractive index, hygroscopicity	DMA , TDMA, OPC	Wang (BNL)	GIFTBD	
??Aerosol size distribution and composition Individual particle chemistry, sizing	Aerodyne AMS	Alla Imre Worsnop (Aerodyne)Dan Imre (BNL)	TBDGIF	
??Size-segregated aerosol composition	Drum sampler, PIXE	Cahill (UCD)	TBDGIF	
??Aerosol composition/absorption	SP-2	Baumgardner	GIF	
Ozone concentration (surface)	Dasibi ozone monitor	Ogren (CMDL) (ARM AOS)	AT	
Ozone column	UV-MFRSR and UV-RSS	Slusser (CSU)	X WHERE?	

AT = Aerosol Trailer

GIF = Guest Instrument Facility

S = NASA GSFC SMART (Surface Measurements for Atmospheric Radiative Transfer) trailer

IAP = In Situ Aerosol Profiling Aircraft (Cessna)

TBD = to be determined

TO = CIRPAS Twin Otter